

CLAIMS

1. A process for the extrusion of a green body from a paste or suspension of particulate material in a liquid (herein referred to collectively as a "suspension"), wherein
5 the process includes the steps of:
- (a) supplying the suspension to and substantially filling an extrusion chamber at a relatively low pressure;
 - (b) applying a substantially higher pressure to the suspension on completion of step (a) whereby the suspension is forced from the extrusion chamber and through a
10 moulding spaced with a dewatering section defined by at least partially liquid-permeable walls; and
 - (c) removing a substantial part of the liquid by establishing a pressure differential across at least parts of said wall that are permeable to said liquid to form a non-flowable shaped body of said particulate material to bring dewatered paste
15 to a final shape for the green body.
2. The process of claim 1, wherein the extrusion chamber has substantially the same principle cross sectional geometry or form as the final product and is pressurized using a piston with the same cross sectional geometry as the final product and fitting into the extrusion chamber.
- 20 3. The process of claim 1 or claim 2, wherein the suspension experiences substantially only cross sectional reductions in its flow through the extrusion chamber towards the de-watering section, whereby the formation of dead spots is substantially prevented; and wherein the cross sectional area of the extrusion chamber is larger than the cross-section of the extruded body.
- 25 4. The process of claim 3, wherein the suspension undergoes a cross section reduction of between 1:2 and 1:10.
5. The process of claim 4, wherein the reduction is from 1:3 and 1:6
6. The process of any one of claims 1 to 5, wherein supplying the suspension in step (a) is through at least one inlet port to the extrusion chamber placed at or close to
30 the end of the extrusion chamber through which the suspension is forced during the extrusion of step (b).
7. The process of claim 2, wherein supplying the suspension in step (a) is through at least one inlet port located where the piston head is positioned on completion of an extrusion stroke and emptying of the extrusion chamber.

8. The process of claim 7, wherein high pressure is applied to the suspension in step (b) by a leading face of the piston head which is inclined with respect to the line of movement of the piston.

9. The process of claim 8, wherein the inclination is such that, on completion of an extrusion stroke, a flow of suspension for filling the extrusion chamber in step (a) for a next stroke, or part of a stroke, cleans the leading face of the piston.

10. The process of claim 9, wherein filling of the extrusion chamber in each step (a) causes or assists in movement of the piston to a retracted position.

11. The process of any one of claims 1 to 10, wherein the pressure at which step (a) is conducted is less than 20 bar.

12. The process of claim 11, wherein the pressure is less than 10 bar.

13. The process of any one of claims 1 to 12, wherein the pressure applied to the suspension in step (b) is from 80 to 240 bar.

14. The process of claim 13, wherein the pressure applied is from 100 to 180 bar.

15. An apparatus for use in the extrusion of a green body from a paste or suspension of particulate material in a liquid (herein referred to collectively as a "suspension"), wherein the apparatus includes:

- an extrusion chamber,
- a moulding space with a dewatering section defined by at least partially liquid-permeable walls;
- means for supplying the suspension to and substantially filling the extrusion chamber at a relatively low pressure; and
- means for applying a substantially higher pressure to suspension in the extrusion chamber and forcing the suspension from the extrusion chamber and through the moulding space, and thereby remove a substantial part of the liquid by establishing a pressure differential across at least parts of said wall permeable to said liquid to form a non-flowable shaped body of said particulate material and bring the dewatered paste to a final shape for the green body.

16. The apparatus of claim 15, wherein the extrusion chamber has the same principle cross sectional geometry or form as the final product and wherein the apparatus further includes a piston for pressurizing the extrusion chamber, the piston having the same cross sectional geometry as the final product and fitting into the extrusion chamber.

17. The apparatus of claim 15 or claim 16, wherein the extrusion chamber is operable to cause the suspension to experience only cross sectional reductions in flow through the extrusion chamber towards the de-watering section, whereby the formation of dead spots is substantially prevented; and wherein the cross sectional area of the extrusion chamber is larger than the cross-section of the extruded body.

18. The apparatus of claim 17, wherein the extrusion chamber is operable to cause the suspension to undergo a cross section reduction of between 1:2 and 1:10.

19. The apparatus of claim 18, wherein the reduction is from 1:3 and 1:6.

20. The apparatus of any one of claims 15 to 19, wherein the means for supplying the suspension includes at least one inlet port to the extrusion chamber placed at or close to the end of the extrusion chamber through which the suspension is forced by said means for applying high pressure.

21. The apparatus of claim 16, wherein the means for supplying the suspension includes at least one inlet port located where the piston head is positioned on completion of an extrusion stroke and emptying of the extrusion chamber.

22. The apparatus of claim 21, wherein the means for applying a high pressure is applied to the suspension in step (b) by a leading face of the piston head which is inclined with respect to the line of movement of the piston.

23. The apparatus of claim 22, wherein the inclination is such that, on completion of an extrusion stroke, a flow of suspension for filling the extrusion chamber for a next stroke, or part of a stroke, cleans the leading face of the piston.

24. The apparatus of claim 23, wherein the means for supplying the suspension is adjusted to cause or assist in movement of the piston to a retracted position.

25. The apparatus of any one of claims 15 to 24, wherein the supplying means is operable to supply the suspension at a pressure less than 20 bar, such as less than 10 bar.

26. The apparatus of any one of claims 15 to 25, wherein the pressure applying means is operable force the suspension at a pressure of from 80 to 240 bar such as from 100 to 180 bar.